



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,593	04/25/2001	Akio Koro	206585US3X	4757

22850 7590 10/04/2002

OBLON SPIVAK MCCLELLAND MAIER & NEUSTADT PC
FOURTH FLOOR
1755 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22202

EXAMINER

SORKIN, DAVID L

ART UNIT	PAPER NUMBER
----------	--------------

1723

DATE MAILED: 10/04/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/841,593

Applicant(s) ¹³²

KORO ET AL.

Examiner

David L. Sorkin

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 01 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 25 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings and Specification

1. The drawings and specification are collectively objected to as being contradictory. On page 10, lines 4-15, the ends indicated as "leading" appear to be trailing in Fig. 2B, based upon the indicated direction of rotation and material flow.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Regarding independent claim 1, it is unclear whether a combination mixing rotor and batch mixer or a subcombination mixing rotor is being claimed. While the preamble "A mixing rotor for use in a batch mixer" suggests only a subcombination rotor is being claimed, other phrases such as "defining a tip clearance between a tip of the mixing blade and an inner surface of a mixing chamber where the rotor is rotatably placed" suggest a combination rotor and mixer body is being claimed.

5. Claims 3, 5, 6, 8-10, 13, 15, 16 and 18-20 appear to contradict their respective base claims. For example, claims 3 and 13 recite "the leading end of the first longer blade at the longitudinal middle of the mixing rotor". There is lack of antecedent basis for such an intended leading end. According to the intended use set forth in claims 1 and 11, "to cause the material to flow toward a longitudinal middle side of the mixing

Art Unit: 1723

rotor", the leading end of the first longer blade should be at an end of the rotor, not the middle.

6. In independent claim 11, recitation of "a mixing chamber where the mixing rotor is rotatably placed" in lines 5 and 6 after lines 1 and 2 recite "a mixing chamber" and "a mixing rotor rotatably placed in the mixing chamber" is confusing.

7. In independent claims 1 and 11, the word "longer" is used in an unclear manner. Specifically, it is unclear what, if anything the "longer" blades are longer relative to. It is noted that on page 6 of the instant specification it is stated that "this embodiment includes a pair of longer blades 12,13 which are longer than half the length L of the mixing rotor 4 and a pair of shorter blades 14,15 that are shorter than that". However, the examiner does not consider this statement to be a definition of "longer" or "shorter".

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

9. Claims 1, 3, 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lohmann (US 1,406,666). Regarding claim 1, Lohmann ('666) discloses a mixing

Art Unit: 1723

rotor (embodiment of Figs 11 and 12) for use in a batch mixer (see Fig. 1), the mixing rotor comprising a plurality of mixing blades (A,B,C,D), each mixing blade defining a tip clearance between a tip of the mixing blade and an inner surface of a mixing chamber where the mixing rotor is rotatably placed to impart shearing forces to a material to be mixed in the tip clearance (see page 2, lines 21-35), wherein the plurality of mixing blades includes a nonlinear blade (A or D) which is substantially nonlinear from a start point to a terminal point in a development of the mixing rotor developed into a plane about its longitudinal axis (see Fig. 12) and other linear blades (B and C) which are linear in development (see Fig. 12) wherein the mixing blades include a pair of longer blades (the pair A,C or the pair B,D) twisted in such a direction as to cause the material to flow toward a longitudinal middle side of the mixing rotor, and the pair of longer blades include a first longer blade (C or B) which is linear and extends from one longitudinal end of the mixing rotor toward the longitudinal middle side thereof, and a second longer blade (A or D, respectively) which is nonlinear and extends from the other end longitudinal end of the mixing rotor toward the longitudinal middle side thereof and whose helix angle gradually increases toward the other longitudinal end (see Fig. 12). Regarding claim 11, Lohmann ('666) discloses a chamber including a mixing chamber (12) and a mixing rotor (embodiment of Figs 11 and 12) rotatably placed in the mixing chamber (see Fig. 1), the mixer comprising a plurality of mixing blades (A,B,C,D), each mixing blade defining a tip clearance between a tip of the mixing blade and an inner surface of a mixing chamber where the mixing rotor is rotatably placed to impart shearing forces to a material to be mixed in the tip clearance (see page 2, lines

21-35), wherein the plurality of mixing blades includes a nonlinear blade (A or D) which is substantially nonlinear from a start point to a terminal point in a development of the mixing rotor developed into a plane about its longitudinal axis (see Fig. 12) and other linear blades (B and C) which are linear in development (see Fig. 12) wherein the mixing blades include a pair of longer blades (the pair A,C or the pair B,D) twisted in such a direction as to cause the material to flow toward a longitudinal middle side of the mixing rotor, and the pair of longer blades include a first longer blade (C or B) which is linear and extends from one longitudinal end of the mixing rotor toward the longitudinal middle side thereof, and a second longer blade (A or D, respectively) which is nonlinear and extends from the other end longitudinal end of the mixing rotor toward the longitudinal middle side thereof and whose helix angle gradually increases toward the other longitudinal end (see Fig. 12). Regarding claims 3 and 13, the leading end of the first longer blade at the longitudinal middle side of the mixing rotor is located at a position spaced apart from the second longer blade by 120 degrees or larger in the circumferential direction of the mixing rotor (see Fig. 12). Note that the reference specifically indicates that the drawing is a scale drawing on page 1, lines 70-74).

10. Claims 1, 3, 11 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Regalia (US 2001/0050880). Regarding claim 1, Regalia ('880) discloses a mixing rotor (5) for use in a batch mixer (1), the mixing rotor comprising a plurality of mixing blades (6,7), each mixing blade defining a tip clearance between a tip of the mixing blade and an inner surface of a mixing chamber where the mixing rotor is rotatably placed to impart shearing forces to a material to be mixed in the tip clearance (see

Art Unit: 1723

paragraphs 0037 and 0044), wherein the plurality of mixing blades includes a nonlinear blade (6) (see Fig. 5) which is substantially nonlinear from a start point to a terminal point in a development of the mixing rotor developed into a plane about its longitudinal axis and other linear blades (7) which are linear in development (see Fig. 5) wherein the mixing blades include a pair of longer blades (6,7) twisted in such a direction as to cause the material to flow toward a longitudinal middle side of the mixing rotor, and the pair of longer blades include a first longer blade (7) which is linear and extends from one longitudinal end of the mixing rotor toward the longitudinal middle side thereof, and a second longer blade (6) which is nonlinear and extends from the other end longitudinal end of the mixing rotor toward the longitudinal middle side thereof and whose helix angle gradually increases toward the other longitudinal end (see paragraph 0031; claim 2; Fig. 5). Regarding claim 11, Regalia ('880) discloses a chamber including a mixing chamber (1) and a mixing rotor (5) rotatably placed in the mixing chamber, the mixer comprising a plurality of mixing blades (6,7), each mixing blade defining a tip clearance between a tip of the mixing blade and an inner surface of a mixing chamber where the mixing rotor is rotatably placed to impart shearing forces to a material to be mixed in the tip clearance (see paragraphs 0037 and 0044), wherein the plurality of mixing blades includes a nonlinear blade (6) (see Fig. 5) which is substantially nonlinear from a start point to a terminal point in a development of the mixing rotor developed into a plane about its longitudinal axis and other linear blades (7) which are linear in development (see Fig. 5) wherein the mixing blades include a pair of longer blades (6,7) twisted in such a direction as to cause the material to flow toward a

Art Unit: 1723

longitudinal middle side of the mixing rotor, and the pair of longer blades include a first longer blade (7) which is linear and extends from one longitudinal end of the mixing rotor toward the longitudinal middle side thereof, and a second longer blade (6) which is nonlinear and extends from the other end longitudinal end of the mixing rotor toward the longitudinal middle side thereof and whose helix angle gradually increases toward the other longitudinal end (see paragraph 0031; claim 2; Fig. 5). Regarding claims 3 and 13, the leading end of the first longer blade at the longitudinal middle side of the mixing rotor is located at a position spaced apart from the second longer blade by 120 degrees or larger in the circumferential direction of the mixing rotor (see Fig. 5).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lohmann ('666) in view of Nortey (WO 99/49960). Lohmann ('666), discussed above regarding claims 1 and 11, depicts the linear blade helical angles of approximately 36 degrees in Fig. 12, which is 1 degree outside the claimed range of 15-35 degrees. Nortey ('960) explains on page 40, lines 11-13 that blade angles of mixing rotors may be adjusted to suit particular properties of the material being mixed. Therefore it is considered that it would have been obvious to one of ordinary skill in the art to have

adjusted the angle of the blades to suit particular material properties as taught by Nortey ('960) on page 40 lines 11-13.

13. Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Regalia ('880) in view of Nortey (WO 99/49960). Regalia ('880), discussed above regarding claims 1 and 11, does not disclose the angle of a linear blade being within the range 15-35 degrees, although the parameter of helical angle of linear segments is discussed and ranges overlapping the claimed range are disclosed (see paragraphs 0030-0034 for example). Nortey ('960) explains on page 40, lines 11-13 that blade angles of mixing rotors may be adjusted to suit particular properties of the material being mixed. Therefore it is considered that it would have been obvious to one of ordinary skill in the art to have adjusted the angle of the blades to suit particular material properties as taught by Nortey ('960) on page 40 lines 11-13.

Allowable Subject Matter

14. Claims 4-10 and 14-20 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion


15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 8:00 -5:30 Mon.-Fri..

Art Unit: 1723

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



David Sorkin

September 27, 2002



CHARLES E. COOLEY
PRIMARY EXAMINER